

REMARKS

Reconsideration of this application, based on this amendment and these following remarks, is respectfully requested.

Claims 3 through 13 remain in this case. Claims 5, 6, 8, and 11 are amended. Claims 1 and 14 are canceled.

Claims 1 and 3 through 7 were rejected under §102(b) as anticipated by the Halter et al. reference¹. The Examiner asserted that the Halter et al. reference teaches a prolog as claimed by way of its teaching that a state metric can be calculated at an intermediate starting point "k" within a window of length "L". The Examiner interpreted this teaching as indicating that there is overlap among windows because the Halter et al. recursion does not start from the last time step of the window.²

Claims 8 through 13 were rejected under §103 as unpatentable over the Halter et al. reference in view of the Abbaszadeh reference³, with the Abbaszadeh reference providing the use of maximum finding among trellis states.

Claim 14 was rejected under §103 as unpatentable over the Halter et al. reference in view of the van Stralen et al. reference.⁴ The van Stralen et al. reference was applied as disclosing alpha and beta generation processes in a MAP decoder.

Claims 1 and 14 are canceled, obviating the rejection to those claims, to advance the prosecution of this case.

¹ Halter et al., "Reconfigurable Signal Processor for Channel Coding & Decoding in Low SNR Wireless Communications", 1998 *IEEE Workshop on Signal Processing Systems* (IEEE, 1998), pp. 260-274.

² Office Action of December 2, 2004, page 2, ¶1 (citing Halter et al., *supra*, page 267, section 4.2).

³ U.S. Patent No. 6,563,877 B1, issued May 13, 2003 to Abbaszadeh.

⁴ U.S. Patent No. 6,304,996 B1, issued October 16, 2001 to Van Stralen et al.

Claim 3 is amended to clarify its patentability over the prior art. Amended claim 3 is now directed to a MAP decoding method for processing a block of data in a sequence of blocks, where the block comprises contiguous partial blocks of data. The method now requires, for each of a plurality of these partial blocks, sequentially processing data elements of the partial block in a first direction, after first processing prolog elements from an adjacent partial block according to the sequencing constraint and in that first direction, and the step of sequentially processing said data elements of the partial block in a second direction, after first processing prolog elements from an adjacent partial block according to the sequencing constraint and in that second direction.

This amendment to claim 3 is clearly supported by the specification. Specifically, the specification provides clear support for the recitation that the block of data comprises a plurality of contiguous partial blocks (*see, e.g.*, the contiguous nature of the partial blocks in Figure 9, namely partial blocks α_0, β_0 of symbols 0-99, partial blocks α_1, β_1 of symbols 100-199, etc.).⁵ The specification also clearly supports the recitations that the processing steps for a plurality of these partial blocks occurs after the processing of prolog elements from an adjacent partial block (*e.g.*, the prolog of symbols 76 through 99 from partial block α_0 for partial block α_1 , and the prolog of symbols 123 through 100 from partial block β_1 for partial block β_0).⁶ No new matter is therefore presented.

Claim 5 is amended for consistency with the amendment to claim 3.

Applicants respectfully submit that amended claim 3 and its dependent claims are novel over the Halter et al. reference, on the grounds that the reference fails to disclose the processing of prolog elements from an adjacent partial block prior to processing a given partial block, as required by amended claim 3. In contrast, the Halter et al. reference clearly shows that its processing of sliding windows of L symbols does not involve the processing of prolog elements for any of these sliding windows. Attention is directed to Table 1 of the Halter et al. reference⁷

⁵ Specification of S.N. 09/772,499, page 14, line 21 through page 15, line 3; Figures 8 and 9.

⁶ *Id.*

⁷ Halter et al., *supra*, page 268.

in which each of the sliding windows of length L are illustrated as being processed in various pipeline times. Consider the forward state metric calculator ("FSMC") of Table 1. At pipeline time $2L$, the FSMC is processing the symbols in window $0-L$ (of length L); at the next pipeline time $3L$, the FSMC is processing the symbols in window $L-2L$ (also of length L), and so on.⁸ In each pipeline time, each execution calculator (FSMC, RSMC0, RSMC1) is processing a sliding window of length L , and in each next pipeline time, each of those calculators processes the next sliding window. But there is no overlap in the sliding windows processed in each pipeline time; there are no symbols from the preceding (or succeeding) sliding window of the Halter et al. reference that are also processed in the next pipeline time in connection with the next sliding window.⁹ The Halter et al. reference therefore simply does not show the processing of prolog elements for any sliding window, or partial block.

The Examiner asserted that the selection of an intermediate starting point " k " indicates that there is overlap among windows, according to the Halter et al. reference.¹⁰ Applicants respectfully disagree. All that the intermediate starting point " k " denotes (and connotes) is the position of the starting symbol for the sliding window processing according to the Halter et al. reference; the successive sliding windows of length L simply beginning from that starting point. There is no teaching in the reference of the processing of prolog elements from an adjacent contiguous window prior to processing a given window. And as discussed above, Table 1 of the reference clearly teaches the absence of such prologs, instead referring to the contiguous sliding windows of L symbols in its processing, with no overlap or other prolog elements illustrated.¹¹ This absence of prolog elements is evident from the Halter et al. reference itself, specifically, in referring to the deriving of reverse state metric calculations "through L time steps", and in its derivation of its memory storage requirements.¹²

For these reasons, Applicants submit that amended claim 3 and its dependent claims are novel over the Halter et al. reference.

⁸ *Id.*, Table 1.

⁹ *Id.*

¹⁰ Office Action, *supra*.

¹¹ Halter et al., *supra*, Table 1.

Applicants further respectfully submit that amended claim 3 and its dependent claims are patentably distinct over the applied references. Specifically, Applicants submit that the combined teachings of the references fall short of the requirements of claim 3, and that there is no suggestion to modify those combined teachings in such a manner as to reach the claims.

As mentioned above, Applicants submit that the Halter et al. reference fails to disclose the processing steps of the claims, in which each processing of a partial block is performed after the processing of prolog elements from an adjacent partial block is performed. The Abbaszadeh reference fails to disclose such processing of prolog elements from an adjacent partial blocks or sliding windows; rather, the Abbaszadeh reference instead shows that its processing *does not* process elements from adjacent windows or blocks, instead showing that its windows of size "D" are non-overlapping.¹³ Nor do the other references, such as the Viterbi et al. reference¹⁴ and the Van Stralen et al. reference, add disclosure or suggestion in this regard; these references disclose the initialization of their processing steps with arbitrary values.¹⁵

Accordingly, Applicants respectfully submit that the combined teachings of the prior art of record fall short of the requirements of amended claim 3. Furthermore, there is no suggestion from the prior art to modify these teachings in such a manner as to reach amended claim 3. The important advantages provided by the claimed method, such advantages including the accurate decoding of a block of data without requiring knowledge of the initial conditions at the ends of the data block, because the processing of the prolog elements efficiently derives these initial conditions.¹⁶ The benefits of this invention, which stem directly from the difference between the claims and the prior art, therefore further support the patentability of claims 3 through 5.

Independent claim 6 is also amended, in similar fashion, to clarify its novelty over the Halter et al. reference. The dividing step of claim 6 now requires the dividing of the data into

¹² Halter et al., *supra*, page 267, last paragraph.

¹³ *Id.*, Figure 2.

¹⁴ U.S. Patent No. 5,933,462, issued August 3, 1999 to Viterbi et al.

¹⁵ Viterbi et al., *supra*, column 9, lines 63 through 66; van Stralen et al., *supra*, column 7, lines 59 through 63.

contiguous sliding window blocks. As discussed above relative to amended claim 3, the specification clearly supports this amendment to claim 6,¹⁷ and as such no new matter is presented. As before, each of the steps a) and b) of claim 6 now recite that the sequential processing of a sliding window block is performed after first processing prolog elements from an adjacent sliding window block. The method of claim 6 also provides the important advantages discussed above relative to amended claim 3, including accurate MAP processing in an efficient manner by deriving the initial states from these prolog elements.

Claim 8 is amended to now be in dependent form, depending on amended claim 6; claim 11 is amended for consistency to the amendment to claims 6 and 8, upon which it depends.

Applicants respectfully submit that amended claim 6 is novel over the Halter et al. reference. As discussed above, the reference fails to disclose the processing of a given sliding window block following processing of prolog elements from an adjacent partial sliding window block, as required by amended claim 6. In terms of the Halter et al. reference itself, there is no disclosure or mention of the processing of its sliding windows of L symbols following the processing of elements from adjacent sliding windows; rather, the various sliding windows of the Halter et al. reference that are processed in successive pipeline times are all of length L symbols, with no overlap between windows shown or disclosed. Table 1 of the Halter et al. reference shows no such prologs, but clearly illustrates the processing of contiguous sliding windows of L symbols, with no overlap.¹⁸ The selection of an intermediate starting point "k"¹⁹ does not amount to the processing of prolog elements from an adjacent contiguous window prior to processing a given window, but instead simply defines a starting point for the sliding windows.

Accordingly, Applicants respectfully submit that claim 6 and its dependent claims are novel over the Halter et al. reference, used to reject claims 6 through 8.

¹⁶ Specification, *supra*, page 11, line 17 through page 12, line 9.

¹⁷ Specification, *supra*, page 14, line 21 through page 15, line 3; Figures 8 and 9.

¹⁸ Halter et al., *supra*, Table 1.

¹⁹ Office Action, *supra*.

Applicants further respectfully submit that amended claim 6 and its dependent claims are all patentably distinct over the prior art of record in this case. Specifically, as discussed above relative to amended claim 3, Applicants submit that the combined teachings of the references fall short of the requirements of amended claim 6, and that there is no suggestion from the prior art to modify those teachings in such a manner as to reach amended claim 6 and its dependent claims.

As discussed above, Applicants submit that the Halter et al. reference fails to disclose the processing of prolog elements as required by claim 6. And the other references also lack teachings in this regard. No such disclosure of prolog processing is provided by the Abbaszadeh reference, because this reference instead shows the processing of non-overlapping windows of size "D".²⁰ The van Stralen et al. reference also add no disclosure or suggestion in this regard, instead teaching the initialization of its processing steps with arbitrary values.²¹ Accordingly, Applicants submit that the combined teachings of these references fall short of the requirements of amended claim 6 and its dependent claims.

Nor is there suggestion in the prior art or otherwise to modify these combined teachings in such a manner as to reach claim 6, especially considering the important advantages that result from the difference between the claim and the prior art, such advantages supporting the patentability of these claims.

Applicants therefore respectfully submit that amended claim 6 and its dependent claims 7 through 13 are novel and patentably distinct over the prior art of record.

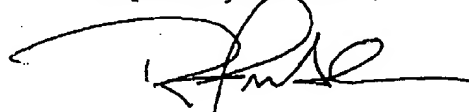
The undersigned appreciates the courtesy of the Examiner in the telephone interviews last fall.

²⁰ *Id.*, Figure 2.

²¹ van Stralen et al., *supra*, column 7, lines 59 through 63.

For the above reasons, Applicants respectfully submit that all claims now in this case are in condition for allowance. Reconsideration of this application is therefore respectfully requested.

Respectfully submitted,



Rodney M. Anderson

Registry No. 31,939

Attorney for Applicants

Anderson, Levine & Lintel, L.L.P.

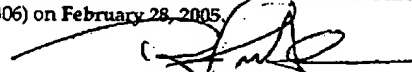
14785 Preston Road, Suite 650

Dallas, Texas 75254

(972) 664-9554

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Rodney M. Anderson
Registry No. 31,939